

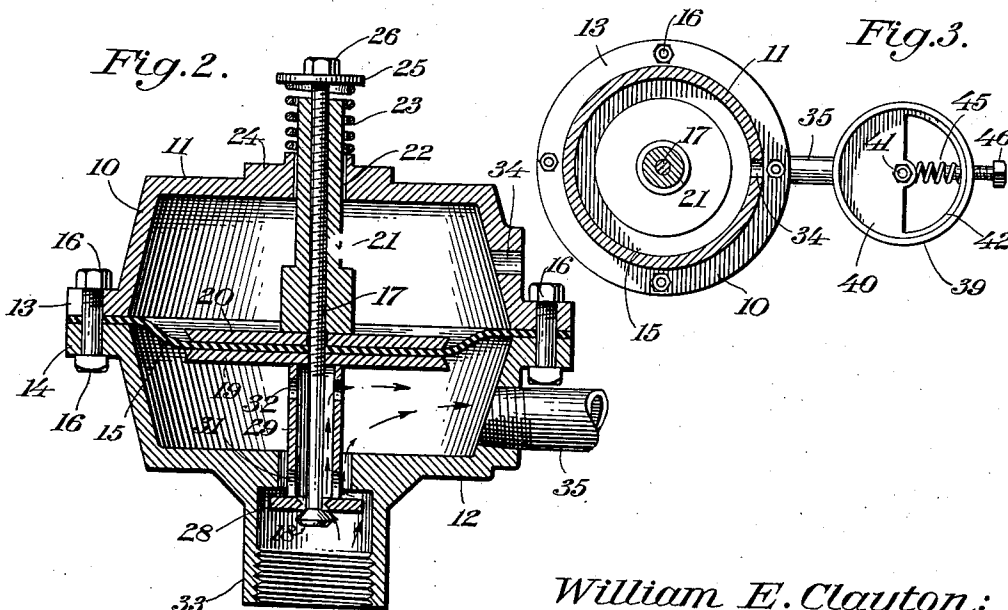
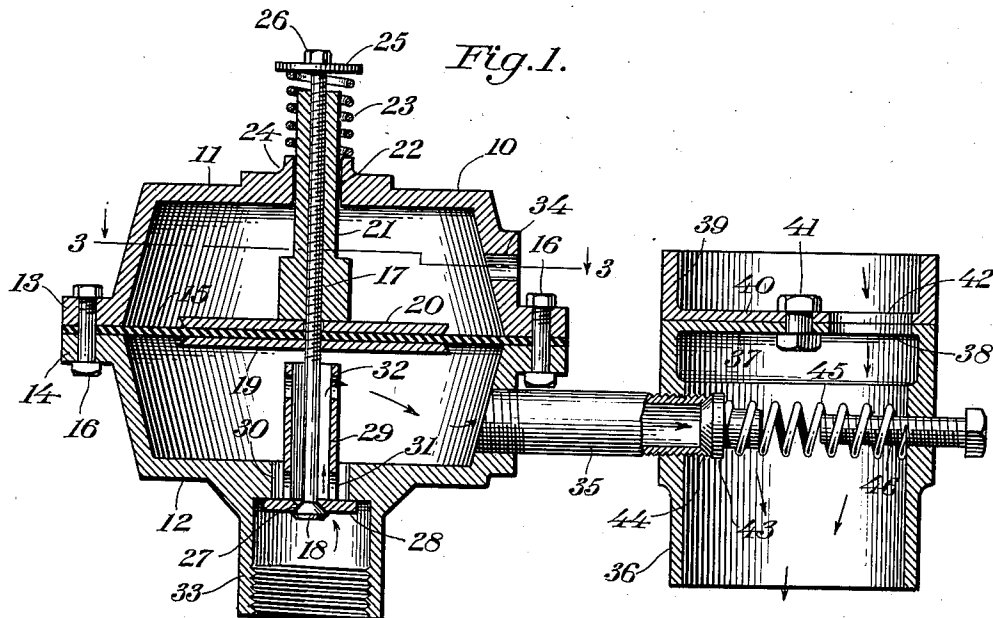
Oct. 15, 1940.

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2,218,145

GAS CARBURETOR

Filed Nov. 8, 1939



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UNITED STATES PATENT OFFICE

2,218,145

GAS CARBURETOR

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Application November 8, 1939, Serial No. 303,487

3 Claims. (Cl. 48—180)

This invention relates to gas carburetors and has for an object to provide a carburetor which may be attached to the air-intake of a conventional gasoline carburetor so that the internal combustion engine may run on gasoline for field work and on natural gas for stationary work.

A further object is to provide a carburetor of this type which may be easily adjusted from the exterior of the carburetor, and which will employ a double valve construction in which a diaphragm will open a small gas valve to feed gas to the engine under the influence of a very small amount of vacuum created by the pistons, the diaphragm subsequently opening a large gas valve when the engine needs more gas.

A further object is to provide a carburetor of this type which will be formed of a few strong simple and durable parts which will be inexpensive to manufacture and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming part of this specification,

Figure 1 is a longitudinal sectional view of a carburetor constructed in accordance with the invention.

Figure 2 is a longitudinal sectional view of the carburetor shown in Figure 1 showing the diaphragm holding both valves open.

Figure 3 is a cross sectional view, drawn to small scale, and taken on the line 3—3 of Figure 1.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, the gas carburetor includes a circular housing 10 formed of similar sections 11 and 12, of cast metal, having respective annular flanges 13 and 14 between which is secured a rubber diaphragm 15, by means of a plurality of bolts 16 which hold the sections together.

A threaded valve stem 17 is engaged axially through the housing and is provided on its lower end with a small valve 18. A disc 19 is threaded at its center onto the valve stem 17 below the diaphragm 15. A second disc 20 is loosely mounted at its center on the valve stem and engages the top surface of the diaphragm. A tubular member 21 is threaded onto the valve stem and abuts the upper disc 20. The tubular member is

slidably engaged in an opening 22 formed in the upper section 11 and projects above the section to receive a helical spring 23 which is sleeved on the member and at the bottom bears upon a boss 24 which is integral with the top of the section 11. The spring bears against a washer 25 which is confined on the valve stem at the top thereof through the medium of a nut 26.

The small valve 18 seats in a valve seat 27 concentrically disposed in a large disc valve 28 having a tubular stem 29 projecting loosely through a relatively large axial port 30 formed in the bottom of the lower section 12 of the housing. The tubular stem is of greater internal diameter than the external diameter of the valve stem 17 and extends to a point just below the lower disc 19. A lower series of ports 31 is formed in the tubular stem 29 near the bottom thereof and an upper series of ports 32 is formed in the stem near the top thereof.

A pipe 33 is formed integral with the bottom section and is internally threaded to be screwed onto a natural gas supply pipe, not shown. A vent 34 is formed in the side of the upper section to permit atmospheric pressure to act upon the diaphragm above the valves 27 and 28.

Connected by a pipe 35 to the lower section 12 of the housing is a mixing chamber comprising a cylindrical body 36 having the upper end thereof closed by a top wall 37 provided with an arcuate slot 38. A cup-shaped member 39 is provided with a bottom wall 40 which is pivotally secured to the top wall 37 of the mixing chamber through the medium of a pivot bolt 41. The cup-shaped member is provided with an arcuate slot 42 adapted to be joined into full register or part register with the slot 38 in the mixing chamber when the cup-shaped member 39 is rotated axially to regulate the amount of air drawn into the mixing chamber from the atmosphere to the cup-shaped member 39. The bottom of the mixing chamber is open and is adapted to communicate with the air-intake of a conventional carburetor of an internal combustion engine.

A valve 43 is seated on a seat 44 formed on the end of the pipe 35 within the mixing chamber and is yieldably held closed through the medium of a helical spring 45 which is sleeved upon a screw 46 and bears with its opposite ends against the inner wall of the mixing chamber and against the valve 43.

In operation at low speeds when a small vacuum is being pulled by the engine pistons the diaphragm 15 will be pulled downwardly with resultant opening of the small valve 18 to feed the

natural gas to the mixing chamber. However, when the engine speed increases and greater vacuum is pulled upon the diaphragm, the diaphragm will be moved downwardly through the space between it and the top of the tubular stem 29 until it impinges against the top of the tubular valve stem, as shown in Figure 2, to open the large valve 28 and permit more gas to be fed to the mixing chamber.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. A natural gas carburetor comprising a housing, a transversely disposed diaphragm in the housing, the housing being vented to the atmosphere above the diaphragm, an inlet pipe for natural gas connected to the bottom of the housing, an axially disposed valve stem in the housing connected to the diaphragm and projecting above the housing, a helical spring sleeved on the valve stem above the housing tending to hold the diaphragm against displacement, a small valve on said stem, a large disc valve seating against the bottom of the housing in said inlet pipe and having a seat receiving said small valve, and a tubular stem for the large valve extending upwardly in the housing to a point adjacent the diaphragm, the arrangement being such that a small vacuum created underneath the diaphragm by suction will force open the small valve and subsequently increased vacuum will displace the diaphragm to impinge the same against said tubular valve stem and open the large valve.

2. A natural gas carburetor comprising a housing, a transversely disposed diaphragm in the housing, the housing being vented to the atmosphere above the diaphragm, an inlet pipe for natural gas connected to the bottom of the housing, an axially disposed valve stem in the housing connected to the diaphragm and projecting above the housing, a helical spring sleeved on the valve stem above the housing tending to hold the dia-

phragm against displacement, a small valve on said stem, a large disc valve seating against the bottom of the housing in said inlet pipe and having a seat receiving said small valve, a tubular stem for the large valve disposed concentric with the stem of the small valve, said tubular stem extending loosely through an inlet port in the bottom of the housing and being of greater inner diameter than the small valve stem, said tubular stem being open at the top and having lateral outlet openings, said tubular stem extending upwardly in the housing to a point adjacent the diaphragm, and an outlet pipe for natural gas communicating with the housing below the diaphragm and adapted to be connected to the air-intake of a conventional carburetor.

3. A natural gas carburetor comprising a housing, a transversely disposed diaphragm in the housing, the housing being vented to the atmosphere above the diaphragm, an inlet pipe for natural gas connected to the bottom of the housing, an axially disposed valve stem in the housing connected to the diaphragm and projecting above the housing, a helical spring sleeved on the valve stem above the housing tending to hold the diaphragm against displacement, a small valve on said stem, a large disc valve seating against the bottom of the housing in said inlet pipe and having a seat receiving said small valve, a tubular stem for the large valve extending upwardly in the housing to a point adjacent the diaphragm, an outlet pipe connected to the housing below the diaphragm, a mixing chamber connected to the outlet pipe and forming a continuation of the air-intake of a conventional carburetor, and valve means in the mixing chamber for regulating the air supply, the arrangement being such that a small vacuum created underneath the diaphragm by suction through the conventional carburetor will force open the small valve and subsequently increased vacuum will displace the diaphragm to impinge the same against said tubular valve stem and open the large valve.

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